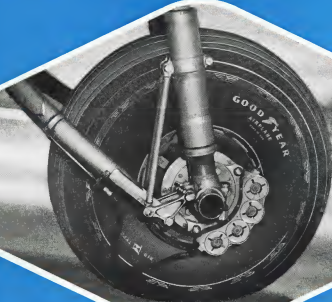


AVIATION WEEK

DEC. 13, 1948

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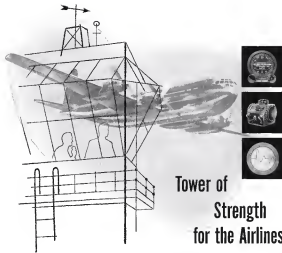
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AVIATION WEEK, December 23, 1945

THE AVIATION WEEK

Aviation and Foreign Aid

Several foreign aviation missions are now in the United States viewing our ways. Western Europe desperately needs a raft build-up of its defenses as power. From these facts some observers have concluded that a new flood of foreign orders reminiscent of 1939-40 are in the offing. There are a number of reasons why such a ripe time of aviation orders should not be anticipated.

The aviation industry has the capacity to handle a greatly increased export demand and it certainly would welcome any new business. However, straight export sales of military types to western European nations are not in prospect. The reason is simple. In 1939-40 Europe was going broke. In 1945 Europe is broke. The western European nations are now dependent on the United States for sufficient food to keep alive. Their dollar balances are so low that they cannot finance the new jet fighters they want to prevent a repetition of the punishing air assaults from the east they suffered in 1940.

Lead-lease Hope

Their only hope of getting enough defense air equipment soon enough seems to be in a new lead-lease type program in which the United States will agree underwrite at least part of their military investment. It is certain that some form of military aid program for western Europe will be presented to the 81st Congress next year. There is little chance that aviation will loom large in whatever program finally goes to Congress.

To understand why U. S. aviation will probably play a minor role in the opening phases of a military aid program for Europe it is necessary to go back to the origin of the North Atlantic Defense Pact now under discussion by U. S. government top policy groups. Preliminary negotiations on the Marshall Plan early this year indicated that economic rehabilitation would not be possible without a corresponding agreement on military defense.

Wanted Defense Pacts

Until a defense pact was forthcoming, no country was willing to depend on its neighbors for vital war industries or strategic raw materials. The western European nations looked to the United States for some definite solution that we would back up our economic aid with something more in event of emergency and that in any event we would not pull out of Europe if and when the cold war warmed up. That substance was given in the title note resolution sponsored by Senator Vandenberg that slipped through the Senate by a 66-4 vote last spring. It stated that the United States looked with favor on formation of a North Atlantic Regional Defense Pact. The earlier hemisphere defense pact at Rio was the precedent for this action. The Berlin airlift offered further proof that

we intended to stay in Europe. Then with the nod from the United States the Benelux nations (Belgium, Luxembourg and Holland) plus France and Great Britain joined in the Brussels defense pact and organized an international general staff to conduct joint defense planning for the western European zone. United States officers have been visiting in this joint defense planning sessions in anticipation of the pact's enlargement to include the United States and Canada. Joint planning established the general roles of each nation in the common defense plan with providing ground forces and Britain tagged to produce defense air power. The United States role was tentatively assigned as provider of the reserve power to back up European ground and air if a conflict develops.

Requirements Drawn

Planning has now reached the stage where specific requirements are being drawn up to fill western European needs. Here, as in the original ECA planning, there will be a wide gap between what Europe wants and what the United States can give. Postage planners would like to provide at least the initial European military and largely out of war surplus stocks. The world is satisfactory for the ground forces but less so for the air. The Europeans want jet fighters to defend their population centers against assault by MiGs. The U. S. Air Force, already embroiled in its own expansion from a post war low, has no jets to spare and would like to export part of its stock of piston piston engine fighters.

At present Britain is supplying western Europe and Scandinavia with jet fighters of her second best type—the Vampire. But a full scale equipping of the western European nations with jets with jet fighters would tax British production facilities beyond their present limits.

Gratifying of what the military and program will add to the next national defense budget seems around a billion dollars a year. Bulk of that will be war surplus equipment for European ground troops. If there is any equipment involved it will be the unexpected Mustangs and Thunderbolts—not jet Shooting Stars and Thunderjets. Some observers feel that the piston fighters will be useful for a few more years in Europe since there is no real indication of large Russian and/or German jet aircraft production and the bulk of the Red Air Force is still World War II tactical types.

So the U. S. aircraft industry can expect no strong stimulus from what is military aid and goes to Europe in the near future. It will continue to depend closely on the military production program in the expansion of the U. S. Air Force and the Naval service for its sustenance. Western Europe will not turn to us soon largely with British Vampires and later Mustangs. Only a sudden darkening of the European scene would materially alter the current planning.

AVIATION WEEK, December 18, 1945

THE AVIATION WEEK

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AVIATION CALENDAR

Dec. 14-15—Aluminum Industries Show. Air Force-Navy-Industry meeting on aluminum wire replacement. Four Third-Look Wright Patterson Air Force Base, California 9504.

Dec. 15—National Weight Reduction Council. Institute of the American Dietetic Association, 1111 Chamber of Commerce Bldg., Washington, D.C.

Dec. 15-16—Nuclear Operations Meeting. Missouri Department of Energy.

Dec. 16-17—Astronautics. From Space Center for History and Education, Houston, Texas.

Dec. 16-17—Florida Power. Alligator Creek HEP National Meeting. Melbourne, Fla.

Dec. 16-17—Research Building. Open, second floor. On American Society of Mechanical Engineers, Columbus Hall, Philadelphia.

Dec. 16-17—Industry of Automotive Parts. From Detroit Meeting and Engineering Council, Hotel Essex-Corbin, Detroit, Mich.

Dec. 17—AEC. Chemicals Division, Albany.

Dec. 17-18—Chemical Process Operations. Conference, University of Illinois, Urbana, Ill.

Dec. 17-18—Fourth NAB Council Meeting. AIA Office, New York City.

Dec. 17-18—19—Space Air Transportation Conference. Air Force, Washington, D.C.

Dec. 17-18—Nuclear Plant. From American Society of Mechanical Engineers, New York City.

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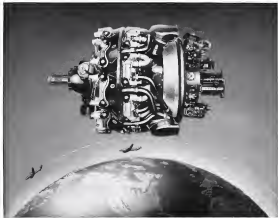
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AVIATION WEEK, December 15, 1948

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increase in payload because of the reduced fuel consumption, or (4) a 20% increase in power for the same amount of fuel. Additional features include:

- Lower specific weight—less than one pound per horsepower developed—because of innovations in engine design—its weight and lines of existing aircraft.
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NEWS DIGEST

DOMESTIC

American Overseas Airlines safe to Pan American Airways reportedly is under discussion. At midweek, neither carrier would comment. New York financial circle state that PAA aside view that airlines several weeks ago and first American Airlines commented with a different paper.

General Aircraft discontinued in September 1950, valued at \$5,450,757. General Aircraft reported. Value of aircraft, parts and other products was \$13,500,770. General Aircraft reported \$47,740,000, with value of plane, parts and other products at \$13,765,872. 1600 aircraft engines (with parts and other products) valued at \$3,640,131.

Boring Airplane Co. delivered the first B-17 Strategic Air Command bomber to the Air Force and received receipt of letter of intent for two more B-17s.

Consolidated Vulture Aircraft Corp. received CAA approval for the third wing section in Convair Lines.

Northwest Airlines filed CAA approval to start route service between Washington and the Twin Cities via Pittsburgh, Cleveland, Detroit and Milwaukee. Rate would be approximately 4 cents a mile.

FINANCIAL

Bell Aircraft Corp. reports net loss of \$412,511 for nine months ending Sept. 30 on sales of \$50,907,545. For the period last year, loss was \$181,161 on sales of \$16,645,702.

Northrup Aircraft Inc. reports net profit of \$11,777 after taxes for last quarter of fiscal year compared to \$186,486 net profit for the period last year. Earnings were \$90 million.

Grumman Aircraft Engineering Corp. reported dividend of 51 per share of common stock payable Dec. 21 to holders of record Dec. 11.

Boeing Aircraft Corp. declared 11 per cent quarterly dividend and 50 cent annual dividend payable Dec. 29 to holders of record Dec. 10.

FOREIGN

International air traffic transactions through IATA clearing house in London for a nine month period of \$15,161,000 in September, exceeding by \$2,644,000 the August total which also was a record. January-September transactions totaled \$54 million, compared to \$57 million in same period of 1947.

INDUSTRY OBSERVER

► U.S. Air Force and Bell Aircraft Co. are studying the application of turbojet and turbojet engines to the X-4 supersonic research plane in an effort to increase its speed and duration. Bell has tested turbojet engines on the XF-85 turbojet fighter. The X-4 has been longest, slowest, slowest and unpowered. It has been successful in research, at supersonic speed, consistently at or just over 10,000 ft. The plane was in a 30 mph. Flights are now being made only at the 20,000 ft. level because of the increased cockpit. This is well below the 30,000 ft. altitude record by the British D.E. Vampires. In passing through the transition, the aircraft becomes unstable under a fast period, exactly as predicted by wind tunnel tests.

► Naval Air Material Center, Philadelphia, is building a wingtip float of titanium, the new wonder metal, to test the aircraft. The float will be tested for corrosion with aluminum, steel, magnesium and other floats in which data have been obtained.

► First official record of dehydrated D-1000 series drive performance in March, 1951, 1.04, generating a speed of 684.45 mph at 15,312 ft. Both Mach number and speed rapidly diminished as the supersonic research plane began its post-flight climb.

► Panavia JNP-1 is now undergoing flight tests at Naval Air Test Center, Patuxent, Md. It is a five in place utility design following the big seven a factor but following on-wing blades to permit carrier-land elevator use.

► Prototype of two new jet engines, each developing 6300 hp, thrust are being tested in Sweden. Both of all-Scandinavian design, one is an engine type built by Swedish Aircraft Engine Co. and the other a centrifugal compressor developed by Stal Engine Co. Swedish Aircraft Engine Co. also producing the British-designed Cobalt engine under license from deHavilland.

► South has orders for 10 Scanlon from ABA, with other contracts in sight. The Swedish manufacturer, however, has not been pushing sales too strongly. It doesn't want to build up a large backlog and a consequent heavy inventory of material when delivery date would have to be several years away. Because of this caution approach the company, industries in development work on the Scanlon at around \$7 million.

► Since the British Taylor-Guy-Bell British Overseas Airways Corp. is being permitted to play a much more important role in specifications and designs for future British transports, The Taylors, and several other British transport designers, were named in the organization of the Ministry of Supply, and British air forces were barely considered.

► North American is putting 22 more Super AT-6 trainers through overhaul in Venezuela and three for the Philippine Air Force. A dual two ago Argentina Navy ordered 50, and 47 were ordered by Peru for its Navy and Navy.

► The Carin 6, Twin turbojet Ventrone engine aircraft is showing wide interest and orders. Small horsepower engine has been delivered to CAA for tests. Larger experimental units are being made for a C-47. Midjet would have been designed to strike the middle of most engine engines and orders for 10,000 units are in progress. Two Stratos engines have produced the sky—do conflict the before-mentioned conflict on these planes. Production still is a one unit, but is under development, at Chrysler (Cald) Airport. He is deciding with overhauls for same production.

► Mid-February was the target date for first use of the Los Angeles Airport FIDO installation. On the day the target date was to be reached of the FIDO. Difficulty in obtaining necessary equipment forced delay of completion.

CAA Studying Huge Pilot Training Center

May locate \$14,000,000 project at Ardmore, Okla., American Airlines school site.

By Robert Hott

Plans for establishing a national pilot training school at which the Civil Aeronautics Administration would train all U.S. civil and military transport pilots are being explored by CAA Administrator Delbert W. Ratzel.

Main purpose of the central training school would be to provide a uniform standard of transport pilot efficiency for all civil and military pilots engaged in transport operations. It would also be aimed at providing adequate pilot training to the use of the new all-weather transport equipment.

Reduce Expenses.—Other objectives would include adequate training of CAA flight inspectors on modern transport types and reducing the cost of initial carrier for training expenses. Under Ratzel's proposed plan the CAA would finance the central school and charge airlines and other organizations that would participate toward a national fee for the courses offered. An Transport Act estimates that U.S. airlines spend from \$15,000,000 to \$50,000,000 annually on training of all levels.

There are now about 5,000 airline pilots and another 10,000 civilian pilots engaged in noncommercial transport operations. In addition to these pilots and their instructors, the CAA would offer the central school to train transport pilots for MARS, U.S. Air Force, Navy and foreign flying units team train. Top CAA and Commerce Department officials feel that the central school would save a national standard of crew training that cannot be provided by individual airline training programs.

Book Shortages.—This also fits that there must be a more satisfactory method of sending out noncommercial pilots than is provided in the past. Companies must be able to meet the need. There has been some criticism that CAA flight inspectors did not have sufficient experience in modern transport types to warrant their passing judgment on the airline pilots they are to test.

Ratzel emphasized the tentative na-



Delbert W. Ratzel

ture of the planning to date and that final plans would require approval and support from the airlines, other pilots and other government agencies. He indicated that if this agreement could be reached, CAA hoped to provide training equipment that is one year experience to be learned either by CAA pilots for its own use or by individual airlines. CAA now sends modern type transports to train its own carrier inspectors and few airlines can finance such extensive outlays for the Delbert type training that offer considerable economy in training costs on low aircraft.

Passover Area.—Ratzel said that the plan would go forward only if it was evident that considerable consensus would exist for both the government and the other groups concerned. Ratzel was expected to get a CAA study on the proposed school this week.

CAA plans to conduct pilot training at Ardmore Oklahoma for the new central school. The new school would be equipped with 17 four-engine jets on multiengine transport type in training. Douglas DC-10, DC-1 and DC-6 Lockheed Constellation, Boeing Stearman Martin 202 and the Cessna 441. These planes would be used for pilot training for transport purposes in

Delbert type training facilities for each type plane used at the school cost of acquiring and equipping the school is estimated at \$14,000,000.

Since CAA receives total of \$125,000,000 and \$150,000,000 is made to American Airlines for its commitment to the Ardmore school Ratzel said that many Americans have no personal commitment at Ardmore and planned to withdraw from the base early next year, there appeared no issues for its support to American Airlines. CAA and Ardmore had been given first consideration as a location for the CAA school because of its good weather, its position near busy airway routes and because its current equipment planned as early addition.

American has operated the Ardmore school on lease from the city of Ardmore since June 1946. The city currently is the field from West Airlines Administration at a rent. The field has lost 2,000 ft runway, 200 acres two hangars, barracks, pilot living quarters, and 20 air conditioning compressors.

American has leased 1,600 people at Ardmore including pilots and ground crew, maintenance, dispatch and flight agents. The school has a capacity of 190 students per month.

Close to Air.—Recent plans call for its use in American's training program in February 1981.

Ratzel's proposed review in also seriously proposed to top American Airlines officials to have the Ardmore school redesign flight training for all airlines.

Ratzel first learned the subject of the central pilot training school to E. A. Carter, an American Airlines pilot who also represents the Air Line Pilot Association. Carter presented the proposal to the ALPA convention in Chicago last month where it was finally rejected.

ALPA Opposition.—ALPA failed to pass a "consent and opinion" paper of attack on the central school proposal. ALPA has objected to the American Airlines school on an alleged method of screening pilots. Several graduates have been out of ALPA members believe to pass the Ardmore tests.

An Transport Act, has been authorized of the Ardmore plan but has taken an official stand as yet. Individual airlines have not yet been approached by CAA on the matter.

A preliminary CAA study on setting up the school at Ardmore indicated it was not feasible. CAA now requests a transportation school with capacity the same proposed at Oklahoma City. 90 miles from Ardmore Ratzel asked a new study of the matter which is now being prepared by L. J. Forney and R. O. Howard of CAA.

No Money.—There is no provision for the present in the CAA budget for its full 1980. Any final decision on the plan would require changes of the Budget approval legislation of whether a new permanent appropriation will be made next year. There has been some consideration of financing initial work on the subject out of CAA funds earmarked for other purposes.

The proposed school would be run by a board of decision headed by Ratzel and staffed by CAA personnel.

Industry Divides On Plane Development

The proposed government-financed commercial plane development program is controversial in a thickening cast of controversy.

Last week there were indications that not only a serious manufacturing opposition to the program consolidated, but that opponents of the on transport industry are coming out in force.

Initiative Program.—The program, which will cost the government an estimated \$50,000,000 a year in commercial cargo and transport plane development, is set back by the end of the period he designed the first work based at Langley Field.

Wanted For NACA.—He was named comparable to the Boeing Stratofortress, the Douglas DC-4, and the Lockheed Constellation.

Jet Voted-A.—50% jet type was knocked out of the program, it is understood, after a preliminary review indicated that its operating cost would be too high to make it viable at the time for commercial use.

The Mission Committee's "tentative" program emphasizes conventional transport types. It makes no provision for the development of low altitude types for the private cargo market, which is a serious criticism, because of the large investment involved, and because the airlines could not be marketed at prices the airlines could sell. Each of the types proposed in the program has

Durand to Get Wright Trophy

Dr. William F. Durand, 81, of Palo Alto, Calif., will be given the late Wright Brothers Memorial Trophy, the new trophy is 14 in. high and features a replica of the original Wright brothers' airplane above a bronze model of the Kitty Hawk, manure. Trophies for the trophy were donated by Dr. Gail W. Loefer, Chief, Boston, Wacoer was determined by a special committee of the National Aeronautics Association, members of the award.

The trophy will be awarded annually on Dec. 17, "an important date in the history of aviation prior to aviation in the United States." The award will not be made on the basis of a single technical or performance achievement but will be based on the total contribution of an individual through his lifetime. It will not be made posthumously, except to the widow of the recipient, but will be awarded to the person.

Achievement.—Dr. Durand, who is a professor emeritus of mechanical engineering at Stanford University, was cited for his work in the field of aircraft design in the field of aeronautical science.

Durand established basic aircraft design theory and performed only as practical work in the field, becoming a world authority on the subject. He was a founder-member of the National Advisory Committee for Aeronautics, serving as a member 1915-1918 and again 1921-1924. He was the first NACA chairman during World War I and helped to establish colleges, universities and schools in the general training program of the air service, including the setting up of flying schools operated by Congress. He was the first person to be designated the first work based at Langley Field.

Wanted For NACA.—He was named



Dr. William F. Durand

scientific attaché to the U.S. Embassy in Paris in 1917. Later in that year he returned to the U.S. where he headed a special NACA committee that developed the aircraft manufacturing cost-accounting agreement. Dr. Durand served as a member and secretary of the Mission board.

From 1924 to 1935 Dr. Durand advised and contributed to the "aero-dynamic" series of experiments, reviewed as the first test in aeronautical research and engineering. In 1941, at the age of 82, Dr. Durand was called back into service by President Roosevelt to coordinate the nation's industry and research establishments in the application of gas turbine power plants to the propulsion of aircraft, that pioneering activity that propelled him in the United States in 1944 he retired, at the age of 86, and now lives in retirement in numerous municipal and national power projects.

a consultant with various characteristics and performance studies available on the subject.

Airline Interest.—With the government financing the development of the planes previously would be available to airlines at a price below that of their already-existing counterparts. This fact has moved some airline interests to look on the program with favor. On the other hand estimates indicate that the government will be able to produce the types would be higher than on the comparable Constellation and Martin 202 craft and also that the operational costs on the high-altitude type would be higher than on the comparable Stratofortress, DC-6 and Constellation. Considering that the higher operational cost would offset the advantage of a lower purchase price, some airline interests have cooled on the program.



Original Wright plane, being reported by Cassin Paul Garber, will have the place of honor in the Air Museum of the Smithsonian Institution—which once reported it.

Wright Plane Back Home at Last

Craft completes its 45-year journey from Dayton to Museum in Washington via Kitty Hawk and London.

By Alexander McNeely

A bird-like and venerable airplane whose evolutions have come to rest on a total flight performance of less than two minutes, finally in a single day nearly half-century ago, assumes first place of honor this week in the National Museum at Washington.

At 10 a.m. on Dec. 17, the 45th anniversary of the Wright Brothers' first powered flight at Kitty Hawk, N. C., in 1903, the reconstructed "Flyer" will be unveiled. The ceremonies will be attended by President Truman, representatives of many foreign nations, and relatives of the Wright Brothers, who will make the presentation of the airplane to the Museum.

The plane will be suspended at the period between the Arts and Industries Building of the Museum in the North Hall—the place formerly occupied by Langley's "Spirit of St. Louis." The new hangar has been moved further back in the hall behind the Flyer.

The airplane was returned recently from the Science Museum in South Kensington, England, after a 20-year stay, an 8000-mile trip. (Aviation Week, Nov. 29).

■ **Unhinged by Blitters.** The two days after it flew back, the old plane through the bombing raids of World War II, but it emerged unharmed. The British had carefully dismantled the Flyer, packed it into subterranean safe keeping of a secret bomb shelter and

hidden it there until war's end. Meanwhile the Science Museum suffered shattering windows and other structural damage in the nearby blitz which might otherwise have leveled off the old airplane.

The original Kitty Hawk biplane was first put together by Wilbur and Orville Wright and their assistant, Charles Taylor, in the Wright cycle shop in Dayton, Ohio, early in 1903.

In September of that year they dropped the metal substructure of the 40-hp monoplane, and on Dec. 17 by a cylinder engine, in Kitty Hawk, a local North Carolina coast settlement.

Popper's design was too light and had to be repeatedly revised. Finally, Orville Wright sent to Dayton himself, two sets of sets of wood and steel, and brought them back to Kitty Hawk.

■ **Yon of Cobs.** A few days later the plane was ready and Wilbur, who had been the top of a crew, launched the biplane after a short run on a wooden runway had down the ridge of Kill Devil Hill. It had not been reported

the front elevator, he might have been the first to fly. But he tilted the front control plane too sharply, the biplane veered up into shifting sandbars, and slipped to the ground. A report noted damage to the front elevator and the landing gear, and it was two days before the plane was ready to fly.

■ **Scheduled.** The first four test flights at Kitty Hawk on Dec. 17, 1903, were:

- 1. Orville Wright pilot, 120 ft., 12 sec.
- 2. Wilbur Wright pilot, 200 ft., 17 sec.
- 3. Orville Wright pilot, 200 ft., 15 sec.
- 4. Wilbur Wright pilot, 352 ft., 59 sec.

Wilbur's landing after the fourth flight resulted in damage to the front rudder. This would have required a day or two more to repair. But then, a sudden gust of wind which was blowing at around 25 to 27 mph velocity during the flights, overturned the airplane and caused wing ribs, motor and gears which caused the crash down from the water in the two previous flights. The Wrights decided on a major repair job at home before coming along any more flights.

■ **Shipped Home.** They hurriedly gathered the pieces of the shattered plane into two boxes and a basket to be shipped to Dayton. There they remained for years, gradually ignored. Meanwhile the Wrights went on to build later and better airplanes instead of repairing the first one.

Next record of the original Kitty Hawk power plane is a letter of Mar. 26, 1908, from Wilbur Wright to Charles Winnett, secretary of the Smithsonian Institution. The letter was an offer which is often overlooked, to place the first power plane in the National Museum at that time.

"We can guarantee the 1903 machine was the first flight ever made at Kitty Hawk," Wilbur wrote. "Most of the parts are still in existence. This machine would occupy a space 40 ft. by 24 ft. by 8 ft."

■ **Unhappy.** Dr. Winnett had accepted the offer; these would have never been the least and later controversy between the Wrights and the Smithsonian Institution. But his reply on Apr. 11, 1910, gave the Wrights the impression that their 1903 Flyer was not wanted in the National Museum. The letter expressed a preference for the 1908 airplane flown by Orville Wright at Ft. Myer. (Over the years, the Smithsonian's argument will establish the 1909 Wright airplane.)

In 1914, the Smithsonian Institution purchased Glenn Curtiss' red airplane builder and pilot, to attempt to fly the old Langley Aerodrome built by Samuel Pierpont Langley, as a



The story of the world's first successful airplane started in Dayton, Ohio, when Orville (left) and Wilbur Wright built it.



Orville made the first flight. A high wind wrecked the plane and it was not reconstructed until 1917. It was shown twice.

project of the Smithsonian Institution.

The Langley plane, which resembled a dragonfly in configuration, had failed twice in attempted landings from a launch in the Potomac river near Washington, in 1903, prior to the Wrights' successful flights. In 1914, Curtiss was involved with the Wright Brothers' company in patent litigation. Dr. Alfred Zehner, his chief expert witness, was also on the staff of the Smithsonian Institution. Zehner and Curtiss rebuilt the old Aerodrome, making a total of 13 changes, almost acknowledged by the Smithsonian.

■ **Allegation.** Raymond Orville Wright discovered these changes by comparing photos of the 1914 Aerodrome, as flown in a few seconds by Curtiss, with the original Aerodrome as described and described in great detail in Dr. Langley's memoirs. Griffith Brewer, president of the Royal Aeronautical Society of Great Britain, and a close friend of Orville Wright, estimated the Curtiss flight at Hantswood Park, N. Y., and made a close inspection of the alterations on the Aerodrome. Brewer afterward made the first exposure of the alterations in a letter to the New York Times. Subsequently he gave a paper before the Society in England, further publicizing the changes.

Sometime prior to 1917, Orville Wright decided to restore the Kitty Hawk. He obtained a duplicate of the



In their inside shop next door to their house, and displayed it by rail and boat to Kitty Hawk, N. C., where on Dec. 17, 1903...



Orville at a New York anniversary exhibit where it was photographed with Orville and Glenn Martin (right). Next stop war.



London, where the plane went in 1915 and was suspended over the table of a dinner given by the Royal Aeronautical Society to commemorate the 25th anniversary of flight.

original "Wings of the West" model shown from the successor to the company which had made the original wing covering material, and spent long hours in the reconstruction project, following the original drawings and descriptions, still in his files.

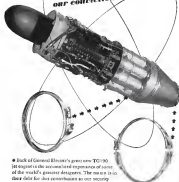
The Kitty Hawk biplane was exhibited at least twice in this country before it was shipped to England in 1915. Once was at the Massachusetts Institute of Technology in Boston, and again it was shown at a New York anniversary show, where Orville Wright was pictured with the plane and the Muckle tragedy with Glenn L. Martin.

■ **First in England.** Brewer, who made frequent visits to Orville Wright at Dayton, urged his friend that if the original plane was not to be exhibited in the National Museum it should be sent to Dayton. In 1915 this was done.

Eventually, the Wright Brothers Flyer was sent to England because of the long-ago question of whether the Wright airplane had been the first motor plane capable of flight. The Smithsonian, through papers and statements, had indicated explicitly that the Langley Aerodrome had been the first plane capable of flight and that this was demonstrated by the 1914 flight by

Power

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● Back of General Electric's great new TO-190 jet engine is the accumulated experience of some of the world's greatest designers. The reason is in their belief for continuous to our society.

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Gaston, ignoring the charges on the plane before those flights were made.

► **Wright's Position**—Orville Wright once defined his position thus: "I live with thousands who could have been the first plane but there was no one else in the world beside Wilbur and myself that had the scientific data for building a machine that would fly."

In October 1942, Dr. Charles G. Abbott, successor to Walcott as secretary of the Smithsonian, published a paper titled "The 1914 Tests of the Langley Aeronautics," which for the first time fully admitted the \$5 changes and it invited other statements about the Aeronautics' capability of flight.

The following year, Orville Wright wrote to the Science Museum, indicating he wished the airplane returned after war's end. This wish was not made public until after Orville Wright's death in 1930.

The first patent plane is destined eventually to be the central focal point of the new National Air Museum, for which plans are being prepared. It will be awarded, if and when Congress provides necessary appropriations, at a location probably close to Washington National Airport in Virginia. It will not be far from where Orville Wright flew his first motor test flights for the U. S. Army Signal Corps in 1903 and 1905.

No Choice Named To Replace Echols

Aircraft Industries Association based at government has not named a replacement of 11 members in meeting May, Gen. (ret) Oliver P. Echols as president of AIA but could not name a replacement.

General Echols, who advocated his resignation in September by accepting a post as chairman of the board, Northrup Aircraft, Inc., Hawthorne, Calif., was re-elected to serve another 2. At that time Capt. Edward D. Wright, USN (ret.), was vice president in charge of AIA's western office at Los Angeles, and because being general manager Wright's place on the West Coast will be taken by John M. Richards, vice Wright's assistant.

J. H. Kunkelberger, chairman of the board, North American Aviation Inc. was elected vice president, president, according to William A. Allen, Boeing-McDonnell Douglas, president, Boeing-Aircraft Corp., was elected vice president.

New members of the board: L. M. T. Cobb, president, Consolidated Vultures Aircraft Corp., according to H. W. Woodford, vice president, Boeing-Aircraft Corp., was elected vice president, Charles H. Lang, vice president, Consolidated Electric Prod. Co., president, Thompson Products, and C. J. Reed, president, Continental Motors Corp.



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Small users everywhere will be glad to know that Mobiloil Aero on fighter aircraft—Whitcomb, Grumman, and Gold Bird—can now find supply. Heavier grades of Mobiloil Aero for commercial planes—Red Bird and Green Bird—are expected to be in their supply early next year.

SERVES EVERY BRANCH OF AMERICA'S AIR INDUSTRY!

SOCIETY-AERONAUTIC OIL COMPANY, INC., and AFFILIATES: MOBIL OIL COMPANY, GENERAL PETROLEUM CORPORATION

QUESTION of QUENCHING

Because of the popularity of Alcoa 24S Alloy throughout the aircraft industry, and because of the sensitivity of 24S to slow quench, as regards its corrosion resistance, the industry has generally come to associate fast quenching with maintained corrosion resistance in all popular Alcoa Alloys.

Actually, lowered resistance to corrosion does not always go hand in hand with slow quench.

SLOW QUENCH

14S-T6
61S-T6

The manufacturer's offering in slow quench with Alcoa 14S or 61S may be producing an opportunity. These alloys, when artificially aged, show effects, when subjected to rapid, relatively insensitive as regards effect of quenching rate on corrosion resistance, they can, in many cases, be quenched at slower rates (as low as 100° per second) with results comparable to fast quenching operations.

FAST QUENCH

24S-T4

For the industry there generally accept and practice, a rapid (fast) quench should be utilized with Alcoa 24S, because of its corrosion resistance to slow quench.

75S

While a fast quench of alloy 75S is not necessary to secure good resistance to corrosion, a fast quench is required to obtain high tensile and yield strengths.

Complete information on quenching of high-strength 75S is available in booklet form from Alcoa. For further information on the other three alloys discussed will be supplied on request. ALUMINUM COMPANY OF AMERICA, 2112 Gulf Building, Pittsburgh 19, Pa.

ALCOA FIRST IN ALUMINUM



ENGINEERING

Convair Trainer

Civil transport greatly modified for Air Force instructional purposes.

Convair's recently approved letter of intent for purchase of 37 T-29 two-engine trainers by the U. S. Air Force will require modification of its conventional transport, the Convair Learjet, to meet military needs.

TBAF order includes modifications for navigational and bombardier trainers that will boost the cost of the T-29 considerably over the lower price.

Bombardier Version—The T-29 bombardier version (top and middle sketch) will feature two bomb bays designed to carry 7200 lb of generic bombs. One bomb bay will be located forward of the wing with the other just aft of the wing root. Both will be outside the pressurized zone.

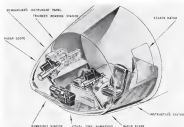
Cabin will be devoted to installation of aerial cameras for recording bombing results and stations for three bombardier instructors, radio scopes for observing radar bombing techniques.

A plastic bombardier-type nose will be fitted to the plane and an access tunnel provided from the cockpit to the nose. One panel will be provided in the nose for bombing, with a turret bombardier and two panels for radio bombing, one to be equipped by an instructor and the other by a trainee.

A radome to house radar antenna will be added to the belly just below the wing. Trainers in this class will be able to observe radio operations in the nose through three duplicate scopes. A gun seat for a flight engineer will be added between seats for pilot and copilot. The bombardier version will have a tactical operating altitude of 25,000 ft at a speed of 250 mph. It will gross 42,172 lb and have an endurance at its tactical altitude of 2 1/2 hr.

Navigational Version—This navigational trainer (lower sketch) will have 14 navigators' seats with complete equipment including basic scopes, working desks, duplicate instrument panels and dials, meters. An instructor will be seated along the top of the cabin. Navigational trainer will gross 40,577 lb and have a tactical altitude of 20,000 ft. Speed at that altitude will be 250 mph, with an endurance of 10 hr. In addition to the 14 student navigators' seat variations will be carried.

Both versions of the T-29 will be used for two-engine pilot and flight engineer instructional training.





Twist fuselage and pusher engine of new personal plane give it tremendous...



Visibility is emphasized in this...



Week W 14, the new two-control plane, from which came the modern E-1000.

New Pusher Tested for Certificate

Anderson Greenwood 14 slated for production early next year. Continental 90-hp. to give 110-mph. cruise.

One of the two two-place pusher-type personal planes to be developed since the war is currently being put through its paces at Texas. Known as the Anderson Greenwood 14, it is a low-high wing, two-place, with tail section curved on front and bottom.

The 14 was designed by Anderson Greenwood & Co., a partner corporation at Houston, Texas. CAA certification tests are underway and the company expects to start production in

early spring. The price is to be an estimated \$10,000.

► **Resembles Weibo**—The new plane is of all metal construction, powered by a Continental 90-hp. engine, and equipped with reversible hydraulic landing gear. It has the general appearance of an up-to-date Weibo W 14, predecessor of the present-day E-1000. It has dual controls, but since all essential instruments can be accomplished with the control wheel along rubber pedals are

located on the left side only. Baggage is stored in a large compartment centrally located behind the seat and is carried in the leading edge of the wing.

The company points out that baggage is carried in a safe area, a major effect on the flying trim of the airplane, since both fuel and baggage are located close to the center of gravity. Other points claimed for the plane are an enclosed system, freedom from noise, and a ground high level of comfort.

The initial flight of the 14 was made on Oct. 1, 1947. Since that time the plane has been flown 200 hr. and put through an extensive flight and aerobically and static test program. Claims are that flight checks show performance equal to or better than conventional planes of similar power.

Del. performance figures and speed claims related to the test are: Maximum cruise, 110 mph.; indicated stall speed at 1300 lb. with flaps, 44 mph.; without flaps, 49 mph.; range, 4 hr.; weight empty, 850 lb.; gross weight, 1400 lb.

Also responsible for design and development of the 14 are Ben M. Anderson, president; Marvin Greenwood, vice president; and Louis Strangler Jr., secretary and chief engineer.

Galleys For Canair

Walter Augsburg division of Walter Sauerwald & Foster Co., Huntington Park, Calif., is manufacturing 23 special galleys for installation in Canadian Ltd.'s Canadian Trans. plane produced for British Overseas Airways Corp. This plane also has designed and manufactured one unit for Consolidated Valleys (ex XPV-3) Navy patrol plane. Walter Sauerwald, industrial engineering of special design for the Lockheed C-124

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IN THE AIR

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Electric Motor Driven
Pump will handle
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When the emergency happens and something goes wrong with the engine-driven hydraulic system . . . DON'T burden the pilot with unnecessary work!

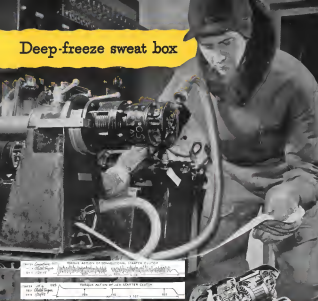
Pilots of high-speed planes have too much to do in emergencies to be bothered with a hand-operated hydraulic pump. And in large, commercial ships, the volume of hydraulic flow required is so great that a hand pump would have to be operated continuously.

To provide for such emergencies, and to make sure the pilots are relieved of all unnecessary

burdens, modern planes are equipped with Pesco electric motor-driven pumps for feathering propellers, lifting and lowering landing gear and other vital operations. Pesco electric motor-driven hydraulic pumps . . . proven by extensive service in both military and commercial aircraft . . . are built for capacities from 4 to 5 g.p.m. at normal pressures of 1500 and 2000 p.s.i. and deliver volumetric efficiencies up to 90%. They are designed for intermittent or continuous duty . . . either open vented or totally enclosed motors. Write today for complete specifications.

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New section wing developed in Australia is shown installed on de Havilland glider for preparing tests. Airfoil open a 16 ft. At right is cross section wing section has smoothly attached to center section. Section fixed at vehicle at point of comparison.

"Tadpole" Wing Uses Boundary Suction

Design of thick airfoil is initially evaluated in glider application.

Australia's new "tadpole" wing, incorporating the principles of boundary layer suction, is reported to have passed successful in model flight tests.

The novel airfoil featuring wood construction, was developed by the Australian Council for Scientific and Industrial Research in association with engineers of the Government aircraft construction plant at Melbourne's Broadmeadows.

On Glider—In a package to sustain related applications to powered aircraft, the wing was tested on a standard de Havilland DH 60 six-passenger glider with its fuselage modified to accommodate a turbine plant and motorization. Section plant comprised a one-trifling fan powered by a Ford V-8 engine.

A series of suction slots is located at the base of the first curve at the top of the wing, at a point where the laminar flow of passing air would normally break away from the airfoil.

Theoretically, then, as it is sucked under the wing to eliminate the breaking of air, and it is believed that it can be ejected in such a manner as to provide a propelling force.



Group of center section explains wing structure. Leading edge has smoothness design.

Wing Application—One, considers two underlying the wing design is that it should prove particularly suitable for all-wing aircraft, since the wing itself, once would lead itself for housing passengers and crew. Applied to a cuff of the DC-4 type, the tadpole wing would have a thickness of about 6 ft.

Design of the airfoil is based on the one which was advanced by Dr. A.

G. Griffith, English aerodynamicist. Research and construction on the wing has been in progress in Australia since early in 1947.

Prior to experimental application on the glider, wind tunnel testing was conducted which indicated that the airfoil should possess important advantages over the conventional type wing as a number of tests.



New Ramjet Test Stand Operating

As important component in a guided missile research program sponsored by the Navy Department has been put into operation at the Applied Physics Lab, center of Johns Hopkins University, Silver Spring, Md.

It is a ramjet engine test stand for simulating flight conditions from sea level to 60,000 ft. Built by General Motors of Miss Kew Co., the installation embodies a ramjet, 60 ft. high and 6 ft. in diameter.

Air supply is taken from pressure tanks or the atmosphere, and passes through a heater and control valve to the jet section where it is mixed with fuel. Hot gases from combustion are exhausted into a water-cooled chamber at the base of the cooling tower.

A battery of windows on the chamber permits observation of the ramjet at various firing angles. At high speed, the cooling tower is the point of spray at three points to reduce temperature to enable handling by vacuum pump.

Topmost spray is refrigerated water. A series of vacuum rings in the upper third of the tower also facilitates cooling of the exhaust.

Cooled gases are drawn off at the top of the tower and discharged into the atmosphere.

Water spray runs off through a horizontal leg to a 40-ft-deep sump.

The test facility is provided with a number of safety cutoffs. If temperature has exceeded a safe limit, air and fuel are automatically shut off. Drop from the sump also automatically shuts off the burner.

Operated by a small crew of technicians, the facility will provide an accurate record of operating ramjet performance data which otherwise could be gained only from costly flight tests.

Some Short jottings for airline operators, charter companies, and their crews

End of a chapter . . .



The Belfast Short Brothers

Farewell to Scaplane Works

On Thursday, Feb. 4, 1954, a solemn funeral was held for the ship into the Memory. This was an historic monument, as this the Belfast was the last aircraft to be constructed in and launched from Scaplane Works, Belfast, after thirty-three years of the factory's existence.

Early Days

It all began in 1921, when the first of Short Brothers' aircraft was built in the first manufacturing of aircraft in the world. It was the first aircraft in the design and construction of aircraft for the R.N.A.S.

One of the first types of aircraft to be built in the factory was the "C" type, a biplane, the first aircraft to be designed specifically for carrying a torpedo.

Gas-bag Experiment

Among the first jobs to be tackled at the new works was the expansion of an aircraft to carry a gas-bag. The idea was that the gas-bag would allow the aircraft to fly over the water, carrying the gas-bag and the aircraft itself.

Another famous type was the "A" type. This was an all-metal light aircraft, carried on a



The "A" type Short Brothers aircraft

launched. This was the world's first all-metal flying boat.

Later came the "B" type (1924), the "C" type (1925), the "D" type (1926), the "E" type (1927), the "F" type (1928), the "G" type (1929), and the "H" type (1930).

Rochester to Belfast

It was in connection with the Belfast boat that Scaplane Works became known. From the Belfast plant came the "G" class, the "H" class, the "I" class, the "J" class, the "K" class, the "L" class, the "M" class, the "N" class, the "O" class, the "P" class, the "Q" class, the "R" class, the "S" class, the "T" class, the "U" class, the "V" class, the "W" class, the "X" class, the "Y" class, the "Z" class, the "AA" class, the "AB" class, the "AC" class, the "AD" class, the "AE" class, the "AF" class, the "AG" class, the "AH" class, the "AI" class, the "AJ" class, the "AK" class, the "AL" class, the "AM" class, the "AN" class, the "AO" class, the "AP" class, the "AQ" class, the "AR" class, the "AS" class, the "AT" class, the "AU" class, the "AV" class, the "AW" class, the "AX" class, the "AY" class, the "AZ" class, the "BA" class, the "BB" class, the "BC" class, the "BD" class, the "BE" class, the "BF" class, the "BG" class, the "BH" class, the "BI" class, the "BJ" class, the "BK" class, the "BL" class, the "BM" class, the "BN" class, the "BO" class, the "BP" class, 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The "A" type Short Brothers flying boat, in service with Imperial Airways

and now, the "B" type, the "C" type, the "D" type, the "E" type, the "F" type, the "G" type, the "H" type, the "I" type, the "J" type, the "K" type, the "L" type, the "M" type, the "N" type, the "O" type, the "P" type, the "Q" type, the "R" type, the "S" type, the "T" type, the "U" type, the "V" type, the "W" type, the "X" type, the "Y" type, the "Z" type, the "AA" type, the "AB" type, the "AC" type, the "AD" type, the "AE" type, the "AF" type, the "AG" type, the "AH" type, the "AI" type, the "AJ" type, the "AK" type, the "AL" type, the "AM" type, the "AN" type, the "AO" type, the "AP" type, the "AQ" type, the "AR" type, the "AS" type, the "AT" type, the "AU" type, the "AV" type, the "AW" type, the "AX" type, the "AY" type, the "AZ" type, the "BA" type, the "BB" type, the "BC" type, the "BD" type, the "BE" type, the "BF" type, the "BG" type, the "BH" type, the "BI" type, the "BJ" type, the "BK" type, the "BL" type, the "BM" type, the "BN" type, the "BO" type, the "BP" type, the "BQ" 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The "A" type Short Brothers flying boat



The "A" type Short Brothers flying boat

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Development of the Stratocruiser

How new transport stems from partnership of manufacturer and airline customer is shown by Boeing, PAA relationship.

Just delivery to an airline of Boeing Airplane Co.'s Stratocruiser, largest and fastest of the commercial transport, will be made shortly. The plane represents the best engineering possible by the manufacturer—and by customer airline. What is its subject role in development of a new transport? Though not the whole story of the development of the Stratocruiser, the following while based on material furnished by Pan American Airways described the important and delicate intercompany role of an airline in the engineering of a new transport.

Manufacturers are experts at producing airplanes. They are not expected to be experts at operating those airplanes in commercial service. A U. S. airline's purchase of an airplane usually involves four or five years of the closest possible relationship with the manufacturer in the planning of the airplane from the original specifications, through the blue prints, up through the manufacturing process to the delivery date.

In the development of a new airplane, one of the most important factors is the loading plan. The airline taking five positions of leadership usually is the last to order the plane. This is the airline as which the manufacturer from and for get along and where, even when have most weight in the plane develops. Moreover, as other airlines come into the picture, their suggestions are considered. In the case of the Boeing Stratocruiser, after the last customer had signed for the airplane's construction

of airline representatives was set up to discuss all proposed changes.

► PAA, for example—Pan American Airways, the first to order the Stratocruiser, assumed leadership in the adaptation of this airplane to airline use. The extent and type of airline considerations to a new airplane are illustrated through the relationship of Boeing Airplane Co. and PAA during the period from the early negotiations of the contract to the final delivery.

The partnership between manufacturer and customer in the airline industry, as typical of U. S. industrial technology, is not new. The process began with the airline industry, and developed strongly in the 1930's.

In the domestic field in the early and middle '30's, first Boeing then Douglas met the need for a dependable work horse of the short haul local traffic Boeing produced the 247, Douglas the DC-2 and DC-3. In the international field one company with extraordinary funds continually tested for an airplane entirely different from that accepted by the airlines. This company—Pan American Airways—wanted fast longhaul flying boats for its over-water hops. It got such equipment first the Sikorsky S-42, then the Martin M-130; and finally the Boeing 314, each one an advance over its predecessor. It operated such equipment ten years before four-engine airplanes were in general use on the domestic airlines.

► Now Vesp-Ultra the Boeing 314 and the world of its time Pan American

ing transportation began thinking of the next step. Already in the drawing boards and in some cases in production run, the Boeing Stratocruiser, the Douglas DC-4 and the Lockheed Constellation. The Boeing, the first postwar four-engine longrange airplane ordered by an airline, represented a significant shift in PAA thinking. The company had previously operated flying boats on its long range routes. These three airplanes were certain to be the much-sought-after of the war and the period immediately following the war. But beyond these what next?

John Trapp, President of Pan American, A. A. Fretter, Vice President and Chief Engineer, Franklin Griffith, Vice President—Passenger, began making studies and drawing up performance requirements. By January, 1941, the new specifications were being circulated to the major aircraft manufacturing companies. These specifications called for an airplane capable of carrying a 75,000 pound payload for 3,000 miles at 775 miles per hour.

With the original 1941 specification a goal, Pan American between 1941 and Nov. 1945, entered closely phases of all major manufacturers for prime airplanes and then entered into contracts with each of them in the hope the product offered could be improved.

But the last compromise of (1) a reliability (2) speed, delivery (3) price (4) fuel and (5) payload turned out to be the commercial development of the Boeing C-57 which was built at the





PROPELLERS These square-tipped Hamilton Standard propellers were specified by PAA to get better performance from plane.



CABIN Boeing's lightweight design of the plane makes the upper deck one of the smoothest passenger compartments ever devised.



COCKPIT Glass PAA's idea, cockpit is built around flight instrument station and streamlines importance of the third crew member.



STAIRWAY A Boeing feature from two-deck design, stairway gives passengers easy access to upper section.

request of the Army Air Forces early in 1945. Active negotiations with Boeing began in June 1944 for an airplane based on the C-97.

► **Location**—In the intermediate, no airplane is primarily the fuselage, wings, control surfaces and landing gear. And when a manufacturer proposes an airplane to a customer, it is primarily this he is proposing.

But the airline executive has, in a sense, a buyer's view. The airplane has to fit into the completed flying machine with which he hopes to take his responsibility to the traveling, sleeping and letter writing public.

Consequently, the period of contract negotiation, with the airline, considers the airplane as a whole, is the most important in the history of any new aircraft. The manufacturer, with nothing in production, offers his engineering staff in design, his production facilities and his method of completion. The airline must commit large sums of money in down payments in what is at first but the airline airplane itself.

In the case of the Stratocruiser and PAA, following an extended period of negotiation a down payment of more than \$6 million was received, 25 percent of the total contract. More than \$7 million actually was paid before the first airplane was delivered.

The relationship between the aircraft maker and the airline develops almost immediately into a partnership.

The partnership of the two main parties is well illustrated by the specific design changes. In June 1946, Boeing proposed an airplane with 3200 hp

engines, 5700 gal. fuel capacity, 320,000 lb. gross weight and a speed of 260 mph. This was a first for an airplane of which Boeing could be proud, but with a possible light for traffic in mind Pan Am

was asked Boeing if it were possible to increase the speed and add to the payload by substituting Pratt & Whitney 3500 hp engines. Pan Am's answer further asked if there was room in the airplane for more fuel which would give the airplane more range.

► **First Change**—Boeing already had been planning to install the new engines in the B-50 bomber and they found it was possible to use them in the Stratocruiser. The new specification also showed that more than 1200 gal. of gasoline could be added, mainly in wing tanks, and that the engine change would allow the airplane to achieve a gross weight of 330,000 pounds.

Pan Am and Boeing discussed this specification and again Pan Am's continued for changes, primarily changes that would push the range of the airplane up. In the new specification, dated Nov. 25, 1946, speed for an over 350 mph of gasoline was made available. This was helped, but the discussion went by no means at an end.

Here the engineering department of the airline's engineering department entered the picture. This department, or the part of it operating at top management level is the airline, is usually small in size. It exists primarily to do long range planning and to answer and even to the manufacturer's manufacturer's questions with the airline industry. The new level it had found from the airplane manufacturer. Almost every component of the

airplane must be checked to see whether some supplier somewhere cannot provide a product that would make the airplane more efficient.

The engineering department's survey of suppliers connected with the airline industry paid off at this time. The original Boeing specification recommended the installation of a mechanical supercharger for the engines. Boeing felt that this would be too complicated for airline use than the turbocharger.

The turbocharger had a drawback in that it had to be installed in the B-17 and B-24. The airline had had some experience with turbochargers on the transport version of the Consolidated B-24. It had flown under Army contract and was aware of the tremendous savings in fuel that could be had by using in high altitude flight. The turbocharging system was incorporated in a specification of Jan. 4, 1947.

The new specification, dated May 23, 1947, called for a gross capacity range 675 to 910 cu ft. Gauge was a bonus that had been developed before the war but during the war needed larger proportions. Pan Am's, as the largest commercial operator for the Army, had developed a life line to supply the Coast Guard's life line for the war.

► **Life Line**—The airline had a life line to supply the Coast Guard's life line for the war. The airline had a life line to supply the Coast Guard's life line for the war. The airline had a life line to supply the Coast Guard's life line for the war.

► **Life Line**—The airline had a life line to supply the Coast Guard's life line for the war. The airline had a life line to supply the Coast Guard's life line for the war.



GALLEY PAA made time and motion studies of mail preparation before specifying the galley from which 62 passengers are served.



LOADS LOUNGE Airline pilot development, the "pilot lounge" is dominated by windows. It is an upper deck, forward of cabin.

improved it as a tool in the postwar two-pilot picture. Pan Am's staff considered what more could be done, and asked Boeing for a further investigation of methods of improving range and payload. Boeing's investigation disclosed that it could now load capacity from 7075 gal. to 7215 gal. It could push the gross weight up another 1000 lb. to 335,000 lb.

Pan Am's staff still heard. The last and final specification of November 28, 1946 showed a transport version of another 400 gal. of gasoline. Boeing found it could install a wing tank just the 11 ft. wide on each side of the wing.

The engine then had needed in almost a different appearance although the outside appearance remained about the

same. The loanword of the Boeing and Pan Am's engineers had increased the payload 10,000 lb. and the gross weight 15,000, increased the gross capacity 3000 gal. against the original 6000 gal. from 280 to 340, and added 1000 gal. to the fuel to improve the plane's maneuverability.

Pan Am's staff for more gasoline capacity and more payload grew out of its experience in aviation operations. And the light did not end with the signing of the contract. The gross weight of the plane was 342,500 lb.

► **Crew Conditions**—Although the questions of speed, payload and range were primary considerations in negotiations of PAA, top management with Boeing these were more other things

about the proposed development of the C-97 which, like an airline pilot of view, needed changing. Typical of these was the cockpit. The cockpit layout first proposed was similar in its essence to that found adequate in the Air Force for the C-97.

Pan Am's engineers believed that controlling the existing pilots of the airline was a serious way of approaching the cockpit problem. While in the company's cockpit basic from any type of airplane ever built for airline use as well as many types which were now commercial service. The C-97 cockpit went to them for approval.

One of the problems was the dashboards provided for the third crew member, the flight engineer. The three men crew



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[illegible]

equipped with PAA in 1929 when a mechanic was added to the flight personnel to maintain engines at stops en route where adequate mechanical facilities were not available. By 1935, the mechanic had developed into a full-fledged flight crewmember.

For PAA's language operations, it was felt that the C-97 is confined to military use and does not permit full utilization of the flight engineer.

► **Head-Mounted-Display** Integrated carpenter to a group of Boeing and PAA engineers and PAA pilots and suggested that they take over a corner of the Boeing cockpit and make it their cockpit as well as themselves. For those days, the carpenter built several new mockups of positions for the pilot, co-pilot and flight engineer with a replica of the cockpit.

The engineers and the pilots saved the various pieces around the floor until the shipyard installed everything. A cockpit had never been laid out in this manner and the entire development out of it has been a learning curve, says Bill Anderson, but also in the Military Air

The major advantages of the Stratosman cockpit layout are the flight engineer relieves the pilot of as many cockpit duties as possible so that the pilot's entire attention can be devoted to his ultimate responsibility of flying the airplane safely, the actual flight panel is simplified as far as possible, the pilot can perform the work of the engineer and if desirable take over his job without notice from his seat, one out of

Taking his lead, the pilot can accept any instrument given to the flight engineer. Although the flight engineer can set power controls from a duplicate set of levers, the pilot, because his levers are larger and therefore can exert more force, can take over the power controls from the flight engineer at a second's notice. This means that, although responsibility is delegated to the engineer under the supervision of the captain, it is not necessarily more so.

■ The Axi-PAA engineers pressed for simplification of functions in the new cockpit. On many airplanes, important controls are placed on both the right and the left of the pilot so that occasionally he must switch hands on the control columns to adjust the dials. Pan American pilots insisted that all major controls be within easy reach of the right hand of the pilot and left hand of the copilot.

Radio communication controls were shifted from the left to the right of the pilot. Navigation light, heater and fire alarm controls also were shifted and some other instruments were changed.

This advance in cockpit layout is entirely due to the participation of relief pilots in the planning of the cockpit. It is precisely the kind of contribution that an airline is better equipped to make than the airline manufacturer.

Having made the suggestions in principle for the layout of the instruments and the control devices and for the layout of the positions of the crew, the Americans asked the highly competent Boeing engineering staff to work out the design details and to build the actual cockpit. The result is a spectacular advance over other airplanes "front offices." On the flight panel, where the pilot must watch at all times, there are fewer instruments to concentrate on than on a DC-1 flight panel.

***Other Changes**—There were other contributions by FSA, both before the contract was signed and afterwards—many of them noted in their significance—which reflected an artist's exuberance rather than a manufacturer's.

The oil system is, for example. The original Boeing proposition showed 50-gal oil tanks serving each engine with lubricating oil. Reichberg built 12 engines in its experience with the Silvertail being built. For America suggested that the oil tanks be smaller, that a 50-gal center tank be installed in the fuselage, and

The system had another virtue. As planes do not waste money while they are on the ground, the American one was in which that system could spend as much money as it wanted. But having the plane back from a trip, the flight engineer will stop at the engine back and go to the engine back. When the flight engineer is back, the engine back needs to be checked. Another virtue was that neither of back at the engine back was more expensive than the other.

◆ **After the Mockup**—There was two distinct phases of vehicle reconstruction cooperation followed: the typing of the mockup. The first was during the building of the mockup. The mockup inspection was in Feb. 1946. Following this was the inspection of the first one-third analysis which was completed

The idea was first conceived by Luck

load and PAA for the Lockheed Combs before. Is one of five on any particular rig, this one switch will further the pumpjack shut off the fuel oil and hydraulic fluid supply, shut off the air tanks bleed for carbon supercharging and start the GDS, extinguishes all in one motion. Previously, separate switches had to be inserted.

In addition, FAA asked Boeing if it was possible to design the electrical circuitry for the flight instruments so that each instrument would have a bus and the failure of one instrument would not cause the failure of all.

Coming back to the propeller question of payload, Fox Associates suggested one further major change, the propeller. PAA was aware that a new propeller was available from the Hamilton Standard division of United Aircraft Corp. and that this would use nearly 600 lb. in weight, or the equivalent of more than three passengers. PAA insisted on the change, although new propellers for 20 airplanes cost an additional half a million dollars.

► **Batteries and Yawmations**—There were many other detailed reviews. Added together, the "change orders" fill a book on each shelf. They range from simple things like resting on a battery above the water line of the airplane in case of ditching to the sex to a request for a new water.

Service, the work of related agencies. FAA noted a number of new developments which it wanted to study on the Clipperton Atoll. The Space Groupings Co. had developed a device with which analysts could measure the amount of water in the soil. FAA anticipated the "engineer's endeavor" independently after extensive studies by a Civil Engineer. Boeing is awaiting a seat on each of the 20 airplanes.

• These fees and \$200,000—altogether, during the three-year period while Pan American maintained a full-time resident staff at the factory, the company spent \$200,000 independently in research and salaries of engineers, pilots and maintenance men who contributed to the development of the C-119 in America. This expenditure is entirely separate from the large cost involved in introducing a new airplane to the fleet.

Pan American took a leading role in the development of the "377" because it was the first contractor. And as the largest contractor for the "377," with four to seven planes on order as any other airline, Pan American obviously had the largest responsibility.



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Pilot "Bed" Developed For Prone Position

Major alterations to the present pilot position—discomfort—may be overcome by the use of a newly designed "bed" made of Nylon and welded to the pilot's legs.

Test pilots have spent 8 hr. in the new bed without discomfort, and even 12 hr. tests have not revealed adverse effects.

Health Details—The prone position has long offered two important advantages for high-speed flight—drag of the airplane can be greatly reduced, particularly in allowing type aircraft, and the human body, when prone, can withstand the exposure of considerably more force.

The U.S. has already tested one prone pilot fighter, the Northrop F-5, and studied dozens of other designs based on the location of the pilot and crew members flat on their stomachs.

In the prone position, the pilot has less air hard surfaces, but also in a padded leather seat. It was to counter the objection that the Aero Medical Laboratory, Air Materiel Command, developed the new Nylon bed, which is designed to provide both comfort and efficiency.

Bed Details—The bed was designed on the basis of anthropometric studies of both dimensions and required motions in the control of a plane. It is actually a framework fitted in a frame approximating the curves of the human body.

The body rests at an angle of about 30 deg., rather than in a true (and uncomfortable) prone position, with the legs from the knee to the feet positioned at 120 deg.

The use of Nylon was recommended by the greatly increased time permissible on the pilot.

The prone pilot also alleviates the concentration of this force by spreading it out throughout his body, rather than concentrating it on the seat in a conventional position.

Crews Affected—Pilot's head rests on two chin pads of foam rubber covered with soft chamois.

The arms are accommodated to rest on foam rubber pads on gas for adjust, elevator, throttle, flap and other controls.

These grips are mounted on a fixed-mounting unit which permits up-down, left and right motion, allowing complete control of the airplane by the crew alone.

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Case 4: Fuel Content

Full-page picture: made by American Dr. **Manassah-Town** with **Reginald Dr.** 2751 Fourth Ave., W. M. Manassah Dr. Manassah, has been engaged for use in all types of appliances, including those with integral full tanks. Features of pipe include: Close of finger is internally insulated; full, nearly low level burning notch, positive in operation and accurate; indicators, (available in three full sizes) with small size can place in 10 crowded panel boards of glass, 30 percent weight reduction, and fuel and moisture proof construction with no moving parts.



High-Flux Bolts and Nuts

[illegible]

Fire-Fighting Equipment

New Titan Inc. Inc., owned by **Walter Kuhnle & Co.**, Belleville, N.J., is equipped with 12 large CCG, in-line compressors by base line in case they change, would claim largest yet developed in test, it is reported that compressor compressed 300 sq. ft. of air in less than 1 min., using 200 lb. of CO₂.



For Aircraft Windows

Logan glass-cleanser that leaves visible but dissolvable surface film after application is manufactured by Sun-Klen Co., 11 Bleecker St., Albany 2, N. Y. Known as No Fog, material is used to produce optical film that gives long protection against fogging and frosting, even under severe conditions. Claim is that light transmission is increased and glass remains clean longer than normally.

Free Metal Cleaning

Impresso Co. GleeCote A-3 liquid brightens and etches aluminum aircraft surfaces, has sand content reduced about 70 percent with increased brightening effect. Benzoin compound is stated to have a neutralizing cleaning characteristic not when used in conjunction with hard water. Chlorox and soap may be added to compound to increase saponification and attack on dirt. Alclad 2000 is a new aluminum alloy. Laboratory tests have shown that with or without addition of chlorine acid, compound has an adverse effect. In addition to its use for brightening by simple dilution with water, material can be used as intermediate metal. Debated with a recommended solvent it may be used as a degreaser for metallic areas. Product is available from the Chemical Co. Inc., Los Angeles, Calif.



Push-Pull Vehicle

Combination living water and ground squirrels and is made by **Moore-Ginsburg Corp.**, Hobart Square, Torr, Ohio. For use with trench box, it is available in 100-gallon plastic drums, 5-gallon plastic jugs, 1-gallon plastic jugs, and in cages, string, etc., and can also be used for living baggage, fluid storage, consumable, and other uses as well as light armor. Device is made of 100% polyethylene, weighs 100 or 750 gals. for 3000 or 10000 lbs. duty. It has diameter pool of 7000 lb. and level living capacity of 25 tons and no fractures. Consider is driven by a Cleveland 12-2, 6-cyl. industrial type engine, 1000 rpm, 10000 ft. min. Control panel assembly for the granulate and engine is mounted in a dolly board, accessible through kingrod door. Dimensions are: Width 29 in., length 30 1/2 in., height 37 in. Working load is 750 in. and maximum speed is 10

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Market Action

LEADING AIRCRAFT EQUITIES

	1946 High	1947 Low	1948 High	Close Nov. 30, 1948
Cessna	54	5	154	122
Boeing	31	5	154	108
Boeing	31	5	154	108
Cessna	54	11	162	86
Cessna-Wright	17	4	179	79
Cessna-Wright "A"	14	11	251	204
Douglas	109	47	217	171
Perchard E & A	5	4	34	44
Cessna	26	9	212	171
Lockheed	45	11	260	161
North	46	14	222	95
McDonnell	17	7	112	81
Northrop	15	5	112	115
Republic	23	4	152	71
United Aircraft	37	17	168	221

Note: All figures are quoted for 1946 and 1947
High and Low for each stock during that year.

Aircraft Stocks Hit Year's Low

Two factors force prices down: general market decline, and fear 1950 procurement funds will be cut.

Aircraft equities were led into new low ground for the year recently along with declining prices for the general market. Apparently, the reported plans for the National Military Establishment as envisioned in the previously projected 1949 fiscal budget may have started a new wave of liquidation of aircraft securities.

With the military budget limited to an estimated \$15 billion, it is reliably reported that the allocation for the U. S. Air Force would permit only 51 combat groups as opposed to the 70 Group program which has found single winged support in Congress and throughout the country. Stated in terms of procurement, this proposed reduction would entail a cut of about 12 percent in new orders as compared to the 1948 fiscal period.

With the aircraft industry as a whole having difficulty obtaining sufficient business to produce adequate margins for the coming year, the report of a drastic reduction of new orders is obvious.

■ No Unlucky Effect—Yet effects on equities companies can be far from uniform. The highly individualistic aircraft industry has always shown a shifting

relative pattern of its very own. There is strong reason to believe this trend will continue.

The accompanying table discloses the market fluctuations of leading aircraft securities over a period of significant importance. Generally speaking, post-war peaks were established during 1946. This reflected the strong financial conditions built by war orders and the optimistic predictions, in some quarters, of a strong demand for commercial planes.

As backlog diminished and revenues of many industries were disrupted through government restrictions a general deflation took place in the market prices of aircraft shares.

■ Upswing—When came the President's Air Policy Commission report, followed in March of this year by the Congressional Aviation Policy Board's report, a new era in the aircraft industry was ushered in. An international condition deteriorated, greater profits were given to aircraft manufacturers. This opened a market recovery in aircraft shares which continued well into 1948.

As the relative positions of the major aircraft companies began to clarify, market participants were quickly made in the price of the individual equities.

But now the general weakness in aircraft shares appears to have hit all aircraft stocks.

■ Examples—For example, the production of Douglas at the low point in 1947 is no better off at the present time, the price of the stock now being at about the same level as at that time. By contrast, Boeing issues that doubled in price from its 1947 low to the Nov. 30, 1948 quotation, and then after a decline from its 1948 peak.

It is significant that in the entire group, only Bell, Cessna, and Martin are currently selling below 1947 lows.

In the recovery which developed in 1948, only Cessna-Wright concerns surpassed its 1946 peak. However, this market action was due to various industry factors resulting from special programs which delivered a average \$2.00 per share dividend on this class of stock. As Cessna-Wright is showing a steady decline in its relative position as an aircraft producer, the more interest on the part of investors and speculation able to directed toward the company's large cash position and its alternate dispositions. Cessna-Wright should expect its 1946 peak price during 1949. While the recent decline has taken the price of the stock down about 37 percent from its high of the year, there has been little change in the company's actual position and earnings outlook.

Nothing is another company whose equities earlier this year almost reached its previous peak of 1946. Its shares are at some 27 percent from its previous high. Yet the company is known to have a larger backlog of orders at the present time than it did in 1946.

One of the most disappointing market performers is Convair. The Atlas Corp. is reported to have received less than a year and has steadily added to its backlog. Recent reports show that Atlas Corp. owns 187,200 shares of Convair in approximately 27 percent of the total stock outstanding. Despite this, having Convair shares has been very wet, and fell below their 1947 low.

Martin has shown even greater weakness. The common stock is down some 50 percent from its 1946 high and about 35 percent below its 1947 low.

■ Change Possible—Which has to be done before the 1949 fiscal budget will be needed. They is always the chance that Congress will not accept the aircraft procurement limitations contained in Senator Foraker's budget.

Regardless of the size of the ultimate cut is visible in the aircraft industry, the distribution of funds will continue to be reflected in the highly selective nature of aircraft equities. As general weaknesses toward the group as a whole is gradually dissipated, the individual strength of the more fortunate aircraft companies will become more apparent.

—Sieg Mitchell

Who was First?



WHO WAS FIRST to apply the age old principle used by the Indians in building lodge-pole canoes, to the development of "stream-line" fuselage cross-section? Answer: The first "stream-line" airplane fuselage patent was filed by F. E. Levy in 1916.



WHO WAS FIRST to apply the ancient laws of flight used by birds to develop a normally aspirated air conditioning system for the fuselage of the famous Douglas DC-3? Answer: The first study of birds in flight led to the development of the DC-3.



WHO WAS FIRST to apply Newton's third law of motion to the design of a stream-line fuselage? Answer: The first jet engine was designed by Frank Whittle in 1930.



WHO WAS FIRST to apply the law of gravity to the design of a stream-line fuselage? Answer: The first jet engine was designed by Frank Whittle in 1930.



More than half a century ago, Whittaker designed the first stream-line fuselage. Today Whittaker's design is the accepted standard of the industry. Whittaker has a long background of practical experience in the design and construction of aircraft fuselages. 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LETTERS

GCA-ILS Study

TO YOUR "LETTERS" column of the Nov. 18 issue, re BOC with interest, a letter titled "GCA and ILS Problems" is sent by Captain H. F. X. Hanson, USAF. Captain Hanson refers to an article by Robert H. Rose and myself (Aircraft World, Aug. 16, 1945) concerning the difficulties airlines encountered in making instrument approaches. Among the items reported to the article Captain Hanson's was the risk one might run if it is possible that GCA is superior to ILS.

In writing the original piece, it was the primary intention to discuss only one problem related to low approaches, namely, at visibility. We intended to stress of flight recordings that approaches below 200 ft. could not be made by the means of the necessary high percentage of compliance due to high altitude in the pilot and airplane. Other flight recordings of instrument approaches on ILS indicated that when high altitude in the pilot was eliminated and approaches were advanced approaches below 200 ft. could be consistently made. As confirmed by Captain Hanson, data on radio navigation approaches such GCA will not be available until that system is perfected. It is pertinent to note that application of instrument techniques to GCA have been deemed necessary.

Captain Hanson does an admirable job of pointing out the excellent features of GCA. We all know that the system have been granted lower minimums through the use of GCA. The study on the conditions that we are fortunate in having two instrument approach systems available. Let's not back to the best advantage.

However, holding a race for either GCA or ILS placed as part in our article. We considered study existing and future systems and attempt to supply in present minimums taken toward what in the real world—conducted approaches below 100 feet. Our piece in Aircraft World was a report on one phase of the study.

H. F. X. HANSON
Flight Research Director
Sperry Gyroscope Co.






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Your editorial editorial seems on convincing the general public to fly is quite timely. A few of the airlines are beginning to make the first. As soon as all of our airlines and aviation business realize the important role of air as a stimulus, I am sure many of the conditions which business conditions will disappear. I have found that many of the million people have to be sold on such a program before they would even consider such as to get started on air education program.

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SALES & SERVICE

Plane Proven as Farm Implement

Flying Farmers hear government reports on spraying.
Fred Lee asks group for code of operating standards.

High profile usage is causing expanding utilization of airplanes and helicopters as farm implements, recent government reports indicate.

Department of Agriculture preliminary reports for the 1946 season showed farmers in the U. S. and Canada used about 34,900,000 lb. of 2,4-D weed killer, or approximately double the amount used in 1947 and five times the amount used in 1946. While some of this chemical was not applied from the air, it is a fair assumption that much less has been so applied.

Fred Lee, deputy CAA administrator, speaking before a Chicago conference of the National Flying Farmers Assn., pointed out that in 1946 approximately one million acres of corn were treated with 2,4-D. In Kansas 500,000 acres of wheat were treated, and in some southern states, half of the country's grain production, 15 percent of the corn applied 2,4-D.

Recommendations—Warning about dangers of seed restrictions on aerial spraying was drafted because of its proper use of the chemical. Lee said recommendations presented by George Chalkin, head of the CAA aerial spraying section, and E. S. Lyons, Department of Agriculture, were that aerial spraying through cotton areas which have been damaged by insecticide spraying.

Recommendations
• Close supervision by CAA on aircraft and operators dispensing 2,4-D
• Limit routes for spraying to areas of specific, carefully supervised and approved for this type of operation.
• Aircraft used must have a positive cutoff valve between tank and gun, loose and also at the nozzle. There should be no leakage.
• Use of rates of 2,4-D should be prohibited in areas where susceptible plants are cultivated.

Operational recommendations concerning action at low velocity, distances between aircraft, altitudes and operation of tanks.

It is pointed out that major difficulty thus far has been with use of 2,4-D and material used in plants, and the drift is difficult to calculate. Use of 2,4-D that has been prohibited by CAA.

Use of liquid 2,4-D is also less than the most effective, yet volatility of the ester makes it dangerous to neighboring sensitive crops. Use of the non-detonable ester form 2,4-D, which has been used but is less effective than the ester form, is preferred for aerial spraying when there is hazard to neighboring crops.

Case Closed—Case is reported by Lee as a judgment of \$1000 against the Chicago Chemical Co., Chicago, for an airplane crash as a result of aerial spraying which allegedly damaged adjacent cotton crops in 1947. Decisions coming against aerial spraying caused insurance that average cotton yield on the compromised farms was higher in 1947 than in previous years. The tests were not used to decide the degree of damage from the aerial spraying.

Active participation by state agricultural colleges in educational programs on aerial spraying and aerial spraying was noted at the Flying Farmers Chicago conference, with announcement of state college short courses for aerial spraying and teaching at University of Illinois.



ADMA OFFICERS AND DIRECTORS

At the recent Aviation Distribution and Manufacturers Assn. convention in Cleveland, the new officers were elected as follows and directors: Left to right seated: H. Donald Richards, executive secretary, F. W. Wagner, Branch Products division, South Bend, Ind.; meeting, Richard N. Roushops, Secretary, Concorde, Pa., president, G. B. Van Dusen, Van Dusen Aircraft Supplies, Inc., Muskegon, Mich. president, H. L. Wheeler, Buffalo Aeronautical Corp., Buffalo, N. Y., standing: Van Dusen, advisory meeting, and

Charles Confort, C. J. Hadden Co., San Francisco, A. M. Rucker, Concorde Tire & Rubber Co., Dayton, Ohio, Grace, Charles F. Rucker, Rucker Aircraft Corp., Chicago, and E. M. Scott, Scott Aviation Corp., Los Angeles, N. Y., all directors.

arts, Dec. 21-22, University of Illinois, Jan. 12-14, Texas A & M College, Jan. 20-21.

• **Code of Standards**—Lee appeared to the Chicago group for voluntary efforts to standardize equipment, and to develop a code of operating standards for commercial spray operators which would forestall need for local or federal regulations limiting the new field of aircraft utility.

Representatives of chemical manufacturers, companies, commercial farming and spraying operators, aircraft manufacturers, agricultural colleges, aviation interests, spraying equipment manufacturers, and C-919 and other aviation officials attended the session along with farmers who own their own airplanes and indicated a desire to use them for spraying, seedling, fertilizing, etc., with a minimum of restriction from either state or federal agencies.

Copter Sales Report Shows Limited Utility

Indications that the helicopter is still a long way from use as a personal aircraft is found in the recent report of Bell Aircraft Corp., on the export sales of 45 helicopters.

None was sold to private owners for personal use. All Bell helicopters now abroad are being used for industrial or military operations.

Of 45 commercial Bell helicopters sales abroad, Argentina has bought 19, Canada, eight, Sweden, five, Brazil, five, England, three, Mexico, three, Iraq, two, and Colombia, one. A substantial number of other foreign sales is pending.

Of the Argentine helicopters, 11 have gone to Embalse Aeronautico Republicana ES, S.A., and have been used principally in combating forest fires and doing other agricultural work. The six remaining eight were purchased by the Argentine Naval Command.

• **Canadian Sales**—Canadian sales (number of units as purchased) were made to: Bombardier, propylant, with headquarters in Toronto; (one); Airways Services, Ltd., Montreal; (three); Photographic Survey Co., Ltd., Toronto, (one); and defuncted Aerojet, Toronto, (three). The latter three could have in sales since either Bell or Bell sales agent for Canada.

British Aerospace Aeronautics Corp. bought two. Iron-Bell Helicopter Sales, Ltd., bought one. The Directorate General of Aeronautics in Baghdad, Iraq, bought two. Cia Impulsos Aeronauticos Mexicana, S.A., formerly Cia Aeromexicana, Mexico City, bought three and is using them for agriculture and other work.

BRIEFING FOR DEALERS & DISTRIBUTORS

TWIN CITIES AIRPORT AGREEMENT—The six-month dispute which has held up expansion of World-Chicago airport is the major Twin Cities air terminal appears now settled out of court. DePinto Aviation, Inc., based here, has agreed to sell the land and building to the Minneapolis-St. Paul metropolitan airport commission order providing for the expansion.

Now, under a proposed agreement, the commission would purchase four DePinto hangars, six-story office buildings and ramp space. DePinto will continue as an operator lease at the field. The sale will be reflected in commission plans call for acquisition of 1961 acres, building a 6500 ft. NW-SE runway, and extending the NE runway 613 ft. to a new length of 6500 ft.

DePinto had previously sought to have the commission choose another site for the major terminal so that it could secure the principal land here operated at World-Chicago maintaining a flight school and other activities.

12 SKYTOWNS RESORTS—Skytours Inc., recently formed consortium of vacation and resort spots with airplane landing facilities, lists 12 resorts as its latest brochure. Skytours headquarters is at Box 129, Bradenton, Fla. Everett J. Wood is president, and Roscoe Brown, operator of Raccoon's Villa Sunset, at Lake George/Lake George, Elizabethtown, N. J., is board chairman. Other branches are C. M. Wilburn, Hainesport, N. J.; Fred Whelan, Gray Rock Inn, St. Louis Airport, Quebec, Canada; Jerome Bates, Sky Lodge, Jackson, N.Y.; and Col. Jack Lapham, Flying L. Ranch, Bendon, Tex.

Other resorts in the group: Air Holiday Inn, Galesburg, Conn.; Blaney Park Resort and Airport, Mich.; Bradley Field Skytel, Bangor, Idaho; Curran's Village, the blocks from Lakeview (Or.) Skypark, King's Gate way Hotel and Airport, Lead Of Lake, Wis.; Oak Lodge and airport, Lake State Rd. West, Grand Rapids, Minn.; and Red's Ranch and Airport, Williams, Missouri, Mo. Organizations seek to recruit flying tourists on an annual membership basis which entitles them to discounts and other privileges at the resorts.

WILL TRY AGAIN—Endurance pilot Ben Smeets and Paul Vlasman, who set the Lancaster Sedan record among some time, when a front engine mishap ended their record attempt at Dallas, want to try again next spring.

They were satisfied with the equipment, they said, and would like to use it again. The method of packing up five gallons gasoline cars at the end of a race provided much needed insurance and they were good insurance except for cars and buses trained as the record being in the dirt. They came within 300 ft. of the existing record of 726 hr.

WHAT PRICE BE-11—Growing export demand for BE-11s desired by foreign governments may get the new supersonic trainer as quick a bid on the used plane market. There was a late cut long ago when they were due to a "dime a dozen."

Price of \$5000 has been quoted in recent advertising for the Yellow-bell long trainer for export and B. E. Case of Case Supply Co., Memphis, Tenn., reports that he has recently sold a good-sized order of BE-11s and plans to put the Dominion Republic Air Force.

MORE LIKE JOE—Lancaster Airplane Corp. at Dallas, would like to have more deals with other like Joe Patten, aircraft dealer at Hattiesburg Field, South Mississippi, who recently placed his first order in Lancaster dealer. He asked for 14 new Lancasters, including two low-price Sedans, eight So. Flys, the low-priced boat seller, two Chocovers, and one each of the Sikorski Special and Sikorski De Luxe models.

RYAN TAKEOFF AND LANDING—In a recent demonstration Ryan announced that a standard Novum, priced at around \$100,000, is produced airplanes on land at San Diego, took off and landed in 50 ft. obstacle from a standing start in 950 ft. and approached over a 50 ft. obstacle, landed, and came to a full stop in 375 ft. Tests were with full 2750 lb. gross load, zero wind, at sea level. —ALEXANDER MESURELY



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Low pressure drop means more air for the plane and greater freedom in selection of ductwork shape, size, and length. The one advantage? You get high performance. In flight, Janitrol heaters use less air, if ground operation is desired, lightweight blowers and smaller motors serve efficiently and well.

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AIR TRANSPORT

Chicago Gets Copter Mail Service

Post Office enthusiasm for project cool because of cost; certification is second of its kind in country.

The nation's second certified helicopter operation is to be established in Chicago and major suburban communities within a 70-mile radius of Chicago Municipal Airport.

Helicopter Air Service, Inc., 515 Harbor Airport, Northbrook, Ill., was chosen by the Civil Aeronautics Board to conduct the certification and property service for the state. Application of Anderson Air Services, Milwaukee, Wis., is expected this month.

✓ Eager. That Los Angeles Southern California of HAS has a 305-mile system in the Chicago area followed by about 15 months of similar operation to Los Angeles Airways, LAA, which started service on Oct. 1, 1947, but a three-year test period, certificate for approximately 280 route miles in the Los Angeles metropolitan area.

CAB established helicopter service in Chicago despite cooling in the Post Office Department's enthusiasm for the project because of its cost. The Board's decision emphasized that further development of the helicopter and the experience to be gained from helicopter operations provide the extent of aerial delivery.

✓ Military Support. Civilian-Built the Air Force and the Navy had urged certification of the Chicago route. "It is the objective of the military to have a nucleus of trained helicopter flight, maintenance and engineering personnel as part of its emergency reserve for defense."

The Chicago helicopter service will expedite mail deliveries from 0 to 30 hr. on weekdays and by 40 to 42 hr. on weekends and preholiday periods. As the second largest city in the United States, Chicago is also the second largest gateway of air mail.

✓ Routes Listed. The three routes are: 1. From Chicago to O'Hare International Airport and terminating at Chicago Municipal Airport.

Segment A includes Service: Oak Park, Park Ridge, Evanston, Winnetka, Wilmette, Glenview, Highland Park, Lake Forest, Waukegan, Libertyville, Mundelein, Palatine, Arlington Heights, and Des Plaines, Ill.

Segment B includes La Grange, Morris, Elmhurst, Villa Park, Glenview, Wilmette, West Chicago, Elgin, St. Charles, Geneva, Batavia, Aurora, Naperville, Downers Grove, and Wood Dale, Ill.

✓ Post Office Makes Study. CAB last summer deferred decision on the Chicago helicopter route for six months to give the Post Office Department time to make study with a satisfactory surface mail transportation system. A subsequent report indicated that new government-owned trucks could perform a service approximately equal to the helicopter operation at an annual overall cost of \$74,000.

But CAB found that considerations of local national interest justify inauguration of the helicopter service on an experimental basis. Besides the obvious improvements the operation affords an additional opportunity of promoting the air transport industry, with aviation as the vehicle and efficiency of a truly new type of aerially scheduled commercial service, the Board decided.

The recent war and the present trend of events demonstrate that it is of considerable public interest that new types of scheduled air transportation be introduced along commercial routes. A reasonable expectation of success. In many respects military and commercial fields of air transportation are one, and of general military service of the helicopter are similar to commercial types.

PAA Sells Boeing 307s

Three Boeing 307 Stratoliners ordered from active service 18 months ago by Pan American Airways have been sold to Airline Training, Inc., Haverhill, Fla. for use in four-engine flight training of pilots, copilots and flight engineers.



LOS ANGELES AIR SHOW

TWA and other carriers whose planes were inspected by about 100,000 persons during the Transportation Day at Los Angeles. Mail post last month think they did a top-notch job of "selling" them. "About 90 percent of the passengers taking airplane flights were first timers, and some of them pleased to see the airlines in the future as a part of their short hops. TWA's Coast-to-Coast route 18 flights during the day carrying 501 passengers at \$2.50 each. All flights were covered, and would be continued were covered again. Western Air Lines made its DC-4 type 185 264 passengers. Together with American Airlines, TWA's and Western Air Lines the same route a single Stratoliner at Los Angeles. Boeing's new W-12, Boeing's latest (last designed), a Los Angeles Airways Strato 307, helicopter (last designed) and two W-12's Coast-to-Coast route and at American DC-4 in the back ground.



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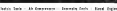


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craft as the Airframe school and have altered the theory of flight and aerodynamics, 5 hr., basic mathematics and physics, 11 hr., weight and balance, 5 hr., Civil Air Regulations, 6 hr., DC-6 emergency procedures, 5 hr., flight performance and "T" category, 7 hr., basic power plants, 10 hr., basic electricity and electrical devices, 5 hr., DC-6 equipment, 15 hr., DC-6 operating technique, 20 hr. engine performance and engine control, 31 hr., and a review of engine theory and trouble-shooting technique, 10 hr. AA third semester will now contain identical work those more by pilots, except that this will have flight engine ratings and piston sleeves with two full stops.

Consistent with extension of the flight engineer deadline, CAA and CAB announced that a study of the factors involved in determining the size of crews for large transport aircraft will be made for the government agencies by the Flight Safety Foundation, New York. The preliminary study is to be completed within 60 days and will be followed by detailed studies.

► **Research Program—CAA and CAB** will consider the merits of the research project for investigating further regulations governing the crew requirements of transport planes. In addition to the flight engineer rating, last summer, American Airlines had argued that questions of crew complement are technical problems which should be decided solely after scientific research by manufacturers, carriers and CAA. American and that pending a thorough investigation of the complications of cockpit design, and the coordination between pilot and co-pilot, or between co-pilot and a single pilot, CAB should not take the dangerous step of rejecting a third criterion into a two-man cockpit such as that of the DC-6.

No Fall Slump In Overseas Traffic

Trans Atlantic air traffic apparently has defied the usual fall traffic slump this year.

Aided by the introduction of speed 70-day extension from Oct. 1, the current season into December with high confidence, last winter. American Overseas Airlines, but to report on November business, and it carried 1171 passengers to Europe during the month as 54 percent gain over the same period last year.

► **Weekend Business Best—AAA** has 2153 passengers weekend during No. 100, up 18 percent over 1947. Load factors on the company's weekend planes averaged between 85 and 90 percent.

Donald R. Harris, AAA vice president

and present managers, and the second coast date, which they had on showings travel for several weeks did not seriously reduce Europe-bound passenger traffic. He attributed the good fall business continued to both the various lines and the growing preference of trans Atlantic travelers for winter flying.

► **Stronip Passenger Stranded—The** machine which had an important bearing on a weekend passenger loads be about three weeks. For a time, AAA's London office received requests for reservations at the rate of one a minute from U. S. bound passengers stranded in England by the storming temp.

TWA also has done well as its overseas operations this fall. The company's international paid-in fare (passenger) and single rate from 50.9 percent in August to 62.2 percent in September, dropped slightly to 58.1 percent in October and bounced back to 62.5 percent during the first three weeks of November.

Pan American Western reports its Atlantic division established new cargo records during October, with an average volume indicated in November.

Most flown by PAA across the Atlantic has reached new peaks during November as the Post Office ordered the company, together with AOA and TWA, to start breaking surface mail backed up by the shipping strike.

After delivery of the first plane NACA

is slated to receive three more in March, one in April, one in June, one in July, two in August and one in September. Purchase of the Stratocruiser reports an incident of nearly \$14,000,800 for Northrup, including the purchase of 14,000,000 parts.

The new variable design plane is to be used on long domestic routes and on NACA's routes to the Orient and to Hawaii.

► **Flight Time to be Cut—Stratocruiser** should cut the flight time from New York to Los Angeles to about 15 hr., the carrier believes. Pacific Northwest in Boeing time is estimated at about 18 hr., and passengers leaving New York at midnight may arrive in Seattle at 8:40 am.

Northrup has already begun preliminary work, testing, and some computer plots have been checked out on the Stratocruiser. Estimated cruising will start in June as the first plane is delivered.

► **First Plane in PAA—Boeing** a building 50 Stratocruiser. The American Airways, which has ordered 26 of the craft, expects to take delivery as the first plane within a few weeks. Other customers are Scandinavian Airlines System, American Overseas Airlines, United Air Lines and BOAC.

Virtually all performance guarantees of the Stratocruiser have been awarded as the approved operating manual for the 75-plane, according to Wall Street. Best, Boeing vice president for engineering and sales. He said aircraft length at the original guarantee weight of 155,000 lb. has been approved at 519,000 lb., an improvement over original estimates.

► **Higher Maximum Weight—Recently** approved gross weight is 141,500 lb. 7500 lb. greater than the original guarantee. But it stands at the increased maximum gross of 141,500 lb. due to increased fuel length now is approved at 6250 lb.



AIRPORT TRAFFIC LIGHT

Stationed Flight. Deane, is using a highway light to control aircraft traffic on the busy area between runways 3 and 5, where

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